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| 10/535,196      | 05/18/2005  | Hideya Kumoni        | 03500.017757        | 5637             |

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EXAMINER

RAO, G NAGESH

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| ART UNIT | PAPER NUMBER |
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1722

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PAPER

Please find below and/or attached an Office communication concerning this application or proceeding.

The time period for reply, if any, is set in the attached communication.

# Office Action Summary

Application No.

10/535,196

Applicant(s)

KUMONI, HIDEYA

Examiner

G. Nagesh Rao

Art Unit

1722

-- The MAILING DATE of this communication appears on the cover sheet with the correspondence address --

## Period for Reply

A SHORTENED STATUTORY PERIOD FOR REPLY IS SET TO EXPIRE 3 MONTH(S) OR THIRTY (30) DAYS, WHICHEVER IS LONGER, FROM THE MAILING DATE OF THIS COMMUNICATION.

- Extensions of time may be available under the provisions of 37 CFR 1.136(a). In no event, however, may a reply be timely filed after SIX (6) MONTHS from the mailing date of this communication.
- If NO period for reply is specified above, the maximum statutory period will apply and will expire SIX (6) MONTHS from the mailing date of this communication.
- Failure to reply within the set or extended period for reply will, by statute, cause the application to become ABANDONED (35 U.S.C. § 133). Any reply received by the Office later than three months after the mailing date of this communication, even if timely filed, may reduce any earned patent term adjustment. See 37 CFR 1.704(b).

## Status

- 1) ☒ Responsive to communication(s) filed on 7/26/07.
- 2a) ☒ This action is **FINAL**. 2b) ☐ This action is non-final.
- 3) ☐ Since this application is in condition for allowance except for formal matters, prosecution as to the merits is closed in accordance with the practice under *Ex parte Quayle*, 1935 C.D. 11, 453 O.G. 213.

## Disposition of Claims

- 4) ☒ Claim(s) 1-12 and 44-47 is/are pending in the application.
- 4a) Of the above claim(s) \_\_\_\_\_ is/are withdrawn from consideration.
- 5) ☐ Claim(s) \_\_\_\_\_ is/are allowed.
- 6) ☒ Claim(s) 1-12 and 44-47 is/are rejected.
- 7) ☐ Claim(s) \_\_\_\_\_ is/are objected to.
- 8) ☐ Claim(s) \_\_\_\_\_ are subject to restriction and/or election requirement.

## Application Papers

- 9) ☐ The specification is objected to by the Examiner.
- 10) ☐ The drawing(s) filed on \_\_\_\_\_ is/are: a) ☐ accepted or b) ☐ objected to by the Examiner.  
Applicant may not request that any objection to the drawing(s) be held in abeyance. See 37 CFR 1.85(a).  
Replacement drawing sheet(s) including the correction is required if the drawing(s) is objected to. See 37 CFR 1.121(d).
- 11) ☐ The oath or declaration is objected to by the Examiner. Note the attached Office Action or form PTO-152.

## Priority under 35 U.S.C. § 119

- 12) ☒ Acknowledgment is made of a claim for foreign priority under 35 U.S.C. § 119(a)-(d) or (f).
- a) ☒ All b) ☐ Some \* c) ☐ None of:
- 1) ☒ Certified copies of the priority documents have been received.
  - 2) ☐ Certified copies of the priority documents have been received in Application No. \_\_\_\_\_.
  - 3) ☐ Copies of the certified copies of the priority documents have been received in this National Stage application from the International Bureau (PCT Rule 17.2(a)).
- \* See the attached detailed Office action for a list of the certified copies not received.

## Attachment(s)

- |   |   |
|---|---|
| 1) <input type="checkbox"/> Notice of References Cited (PTO-892)  | 4) <input type="checkbox"/> Interview Summary (PTO-413)<br>Paper No(s)/Mail Date. _____ |
| 2) <input type="checkbox"/> Notice of Draftsperson's Patent Drawing Review (PTO-948)                                  | 5) <input type="checkbox"/> Notice of Informal Patent Application                       |
| 3) <input checked="" type="checkbox"/> Information Disclosure Statement(s) (PTO/SB/08)<br>Paper No(s)/Mail Date _____ | 6) <input type="checkbox"/> Other: _____  |

***Claim Rejections - 35 USC § 112***

The following is a quotation of the second paragraph of 35 U.S.C. 112:

The specification shall conclude with one or more claims particularly pointing out and distinctly claiming the subject matter which the applicant regards as his invention.

- 1) Claim 47 recites the limitation "non-crystalline substrate is one selected from the group consisting of a quartz substrate, a glass substrate, and a plastic film" in dependence to claim 1. This is vague and indefinite due to the fact that two of the possible selected materials, quartz which is an inherently crystalline material and certain glass substrates like silicates or boro-silicates can have both a crystalline or non-crystalline nature, the latter being amorphous, but said specified limitation is not adequately claimed. Thereby claim 47 is vague and indefinite in its limitation dependency from claim 1.

The following is a quotation of the first paragraph of 35 U.S.C. 112:

The specification shall contain a written description of the invention, and of the manner and process of making and using it, in such full, clear, concise, and exact terms as to enable any person skilled in the art to which it pertains, or with which it is most nearly connected, to make and use the same and shall set forth the best mode contemplated by the inventor of carrying out his invention.

- 2) Claim 1 is rejected under 35 U.S.C. 112, first paragraph, as failing to comply with the written description requirement. The claim(s) contains subject matter which was not described in the specification in such a way as to reasonably convey

to one skilled in the relevant art that the inventor(s), at the time the application was filed, had possession of the claimed invention. The limitation pertaining to “wherein the thin film is provided on a non-crystalline substrate” cannot be located in applicant’s specification. Examiner has noted in the remarks no reference to where this limitation could be found either. It is respectfully requested, that applicant either delete said limitation or show where in the specification support can be found for said limitation.

***Claim Rejections - 35 USC § 102***

The following is a quotation of the appropriate paragraphs of 35 U.S.C. 102 that form the basis for the rejections under this section made in this Office action:

(b) the invention was patented or described in a printed publication in this or a foreign country or in public use or on sale in this country, more than one year prior to the date of application for patent in the United States.

3) Claims 1-12 and 44-47 are rejected under 35 U.S.C. 102(e) as being anticipated by Kumomi (EP 1,262,578).

Kumomi 578 pertains to the process for producing single crystal semiconductor layer and semiconductor device produced by said processes, whereby it is taught producing a crystalline thin film by melting and

recrystallization in a specific region separate from a non-surrounding region having a locally melt and recrystallization process as shared with the non-surrounding region by a common boundary whereby the thin film is provided on a non-crystalline substrate, in Kumomi 578's case that being a glass substrate and inferred from the teachings as being amorphous in nature. Furthermore as taught by Kumomi 578 the processes steps set forth in the claimed language may be repeated resulting in crystallizing of areas to grow in the direction of shifting while ensuring that regions prepared for forming the crystalline thin film are aligned in an orderly fashion as each spot in a shifting forward manner is spot treated via a laser deposition to melt and recrystallize said section of the thin film as it is being created before proceeding to the next section.

Furthermore Kumomi 578 teaches a process for producing a crystalline thin film, wherein an area including a part of a boundary between a position-controlled crystal grain of a thin film and the surrounding region is made a melting-recrystallized area, and the crystal grain is made to laterally grow by a melting-recrystallization step in which the melting-recrystallized area is locally heated pulsewise, and molten and recrystallized.

Finally Kumomi 578 teaches an element formed by using the crystalline thin film obtained in the processing steps above, wherein a spatial position of at least a

part of a crystal grain having a continuous crystal structure is determined by a spatial position of a specific region in a starting thin film, and a crystal grain having the controlled spatial position is used in an active region, whereby the active region is formed in a single crystal grain of the crystalline thin film, forming in end a circuit comprising a plurality of elements which are connected to one another by a wire (See Abstract, Figs 1A-15, Pp. 1-42).

### ***Claim Rejections - 35 USC § 103***

The following is a quotation of 35 U.S.C. 103(a) which forms the basis for all obviousness rejections set forth in this Office action:

(a) A patent may not be obtained though the invention is not identically disclosed or described as set forth in section 102 of this title, if the differences between the subject matter sought to be patented and the prior art are such that the subject matter as a whole would have been obvious at the time the invention was made to a person having ordinary skill in the art to which said subject matter pertains. Patentability shall not be negated by the manner in which the invention was made.

The factual inquiries set forth in *Graham v. John Deere Co.*, 383 U.S. 1, 148 USPQ 459 (1966), that are applied for establishing a background for determining obviousness under 35 U.S.C. 103(a) are summarized as follows:

1. Determining the scope and contents of the prior art.
2. Ascertaining the differences between the prior art and the claims at issue.
3. Resolving the level of ordinary skill in the pertinent art.
4. Considering objective evidence present in the application indicating obviousness or nonobviousness.

4) Claims 1-12 and 44-47 are rejected under 35 U.S.C. 103(a) as being unpatentable over Sugahara (US Patent No. 4,822,752) as applied to claims 1-12 and 44-47 above, and further in view of Kumomi (EP 1,262,578).

Sugahara 752 pertains to the process for producing single crystal semiconductor layer and semiconductor device produced by said processes, whereby it is taught producing a crystalline thin film by melting and recrystallization in a specific region separate from a non-surrounding region having a locally melt and recrystallization process as shared with the non-surrounding region by a common boundary. Furthermore as taught by Sugahara 752 the processes steps set forth in the claimed language may be repeated resulting in crystallizing of areas to grow in the direction of shifting while ensuring that regions prepared for forming the crystalline thin film are aligned in an orderly fashion as each spot in a shifting forward manner is spot treated via a laser deposition to melt and recrystallize said section of the thin film as it is being created before proceeding to the next section.

Furthermore Sugahara 752 teaches A process for producing a crystalline thin film, wherein an area including a part of a boundary between a position-controlled crystal grain of a thin film and the surrounding region is made a melting-recrystallized area, and the crystal grain is made to

laterally grow by a melting-recrystallization step in which the melting-recrystallized area is locally heated pulsewise, and molten and recrystallized.

Finally Sugahara 752 teaches an element formed by using the crystalline thin film obtained in the processing steps above, wherein a spatial position of at least a part of a crystal grain having a continuous crystal structure is determined by a spatial position of a specific region in a starting thin film, and a crystal grain having the controlled spatial position is used in an active region, whereby the active region is formed in a single crystal grain of the crystalline thin film, forming in end a circuit comprising a plurality of elements which are connected to one another by a wire (See Abstract, Figs 1-17B, Col 1 Lines 9-51, Col 3 Lines 54-68, Col 4 Lines 1-68, Cols. 7-9, 11, 13, and 15 Lines 1-68).

However Sugahara 752 fails to disclose the limitation of wherein the thin film is provided on a non-crystalline substrate. The disclosure of the background and present invention of analogous art Kumomi 578 iterates (as mentioned above in the previous 102(b) rejection) the use of an amorphous non-crystalline substrate such as glass, in order to prevent lattice disorientation from occurring between the thin film layer (such as amorphous films) and a non-crystalline substrate. It would therefore be obvious to one having ordinary skill in the art at the time of the invention to modify the teachings of Sugahara 752 with that of Kumomi 578 in



order to further optimize the parameters that govern fabrication of crystalline thin film based technologies/microelectronics.

*Response to Arguments*

5) Applicant's arguments with respect to claims 1-12, 31, and 44-47 have been considered but are moot in view of the new ground(s) of rejection.

*Conclusion*

6) Applicant's amendment necessitated the new ground(s) of rejection presented in this Office action. Accordingly, **THIS ACTION IS MADE FINAL**. See MPEP § 706.07(a). Applicant is reminded of the extension of time policy as set forth in 37 CFR 1.136(a).

A shortened statutory period for reply to this final action is set to expire **THREE MONTHS** from the mailing date of this action. In the event a first reply is filed within **TWO MONTHS** of the mailing date of this final action and the advisory action is not mailed until after the end of the **THREE-MONTH** shortened statutory period, then the shortened statutory period will expire on the date the advisory action is mailed, and any extension fee pursuant to 37 CFR 1.136(a) will be calculated from the mailing date of the advisory action. In no event, however,

will the statutory period for reply expire later than SIX MONTHS from the date of this final action.

Applicant's submission of an information disclosure statement under 37 CFR 1.97(c) with the fee set forth in 37 CFR 1.17(p) on 7/26/07 prompted the new ground(s) of rejection presented in this Office action. Accordingly, **THIS ACTION IS MADE FINAL**. See MPEP § 609.04(b). Applicant is reminded of the extension of time policy as set forth in 37 CFR 1.136(a).

A shortened statutory period for reply to this final action is set to expire THREE MONTHS from the mailing date of this action. In the event a first reply is filed within TWO MONTHS of the mailing date of this final action and the advisory action is not mailed until after the end of the THREE-MONTH shortened statutory period, then the shortened statutory period will expire on the date the advisory action is mailed, and any extension fee pursuant to 37 CFR 1.136(a) will be calculated from the mailing date of the advisory action. In no event, however, will the statutory period for reply expire later than SIX MONTHS from the mailing date of this final action.

Any inquiry concerning this communication or earlier communications from the examiner should be directed to G. Nagesh Rao whose telephone number is (571) 272-2946. The examiner can normally be reached on 9AM-5PM.

If attempts to reach the examiner by telephone are unsuccessful, the examiner's supervisor, Yogendra Gupta can be reached on (571)272-1316. The fax phone number for the organization where this application or proceeding is assigned is 571-273-8300.

Information regarding the status of an application may be obtained from the Patent Application Information Retrieval (PAIR) system. Status information for published applications may be obtained from either Private PAIR or Public PAIR. Status information for unpublished applications is available through Private PAIR only. For more information about the PAIR system, see <http://pair-direct.uspto.gov>. Should you have questions on access to the Private PAIR system, contact the Electronic Business Center (EBC) at 866-217-9197 (toll-free). If you would like assistance from a USPTO Customer Service Representative or access to the automated information system, call 800-786-9199 (IN USA OR CANADA) or 571-272-1000.

GNR

*/Robert Kunemund/  
Robert Kunemund  
Primary Examiner  
TC 1700*